DEFINITION OF POTENTIAL EFFECTS

Once the numbers or density of known and potential resources within each has been determined, an assessment of the potential of the construction and operation of each possible disposal site can be undertaken. However, one must also consider the nature of the effects that are anticipated to occur. Three sets of effects can be defined. These include:

actions undertaken to build the disposal site.

actions undertaken to operate or to utilize the disposal site.

impact of the active or abandoned disposal site on the surrounding landscape.

A brief summary of the kinds of activities that may affect cultural resources within disposal sites with respect to each of these aspects follows.

Development of a dredge disposal site will involve construction of dikes and preparation of the enclosed area. For the most part, construction occurs above grade (i.e., at the existing ground surface). However, some preparation of the area that supports the dike is necessary to produce a stable containment structure. This preparation should include the removal of organic materials (e.g., stumps, logs, root mats, etc.) from the area that will support the dike structure. This will likely result in below ground disturbances to depths of 1-2 ft on most upland locales. Such disturbances would result in severe disruption or complete destruction of cultural deposits that may be present within the construction zone. Dikes built on areas of marsh undoubtedly will require similar preparation (removal of soft muds overlying sand deposits?). Most intact cultural resources in marsh environments can be expected to occur beneath the fine muds that represent the surface of the marsh. Thus, the actual construction may not disturb such resources. preparation of the impounded area, particularly uplands, also may require the removal of timber and other organic debris. Similar impacts to buried cultural resources could be expected to occur in these areas as well. Only the underwater sites will require little or no modification to the areas designed to support a dike structure.

Once the site has been prepared, actual dike construction will involve the deposition of materials to form the containment structure. In most instances, this material will be taken from within the impounded area (for upland sites) or from previously dredged material (in or near existing disposal sites). Thus, none of the upland or marsh sites will require the excavation of borrow pits outside the projected impoundments. Underwater sites that require dikes (e.g., Sites L and S) will use newly dredged materials (generally coarser alluvium than sediments collected during maintenance dredging of shipping channels) collected during the preparation of new docking facilities (e.g., at the State Ports Authority "Terminal X" on Daniel Island or expansion of existing docking areas). Thus, actual construction should not result in significant "invasive" impacts beyond those noted for

site preparation. However, deposition of spoil materials will result in obfuscation of cultural resources that are buried beneath the impoundment structures, severely restricting access to resources that may have not been adversely affected by the actual construction activities. As noted above for existing disposal sites, resources buried under many feet of sediment are effectively destroyed since access will be extremely costly (if not impossible). The effects of the additional weight of the dike on deeply buried terrestrial resources also may be detrimental. Such deposition on underwater sites is not considered as detrimental by the SCIAA underwater archaeologists (Christopher Amer, personal communication 1992); however, access to underwater cultural deposits would be severely restricted by the construction of dikes on top of such resources.

Thus, construction of dikes and preparation of the impounded disposal area can be expected to produce a variety of adverse effects to cultural resources that may be present within the possible disposal site. Terrestrial resources appear to be more sensitive to these impacts than underwater resources; however, access to any sites buried under dikes will be severely restricted. In most instances, this restricted access will effectively prevent any future examination of the resource. Effects related to dike construction activities can be expected in Sites A, C, D, F, G, H, I, M, N, Q and R. Effects related to the preparation of impounded areas could be expected in Sites D, F, G, H, Q, and R. Sites B, E, J, and K involve modifications to existing disposal areas without expansion of the dike systems to incorporate previously undisturbed lands. Sites L and S will involve construction of underwater dikes; offshore Sites O and P involve no dike construction or site preparation.

Operation of disposal site will involve two sets possible effects. Primarily, any resources within the impoundment will be buried under many feet of dredged sediments. As noted for dike construction, the burial of cultural resources beneath such deposits effectively eliminates access to these resources and any significant information they may contain. The increased weight and moisture also will likely degrade any buried terrestrial resources within upland disposal sites. Possible impacts to buried resources also may occur during rehabilitation or stabilization of the dredged areas, when large ditches are excavated through the spoil to permit the release of water trapped in the dredged materials. If this excavation intrudes upon former ground surfaces beneath the spoil, adverse effects to buried resources could be expected. Once again, the effects on underwater resources buried beneath dredged materials appear to be less than those anticipated for terrestrial resources. Only Sites B, E, and K, incorporating completing existing disposal areas will not have no effect on cultural resources during their operation.

The construction and operation of a disposal site also will affect the setting or landscape surrounding the actual facility. The presence of a large containment structure has the potential to intrude upon the setting of historic properties within or adjacent to Charleston Harbor. Use of existing disposal sites, while creating similar intrusions, probably can be considered to produce less adverse effect since most have been in use or existed at the time that the historic properties in the Harbor were listed on the NRHP. New disposal areas that are near or visible to NRHP listed properties (e.g., Sites L, M, and N) may

produce such adverse effects. As an example, construction of disposal facility at Site M may intrude upon the setting of Fort Sumter. While the actual area included in the current National Park will not suffer impacts, the setting of the fort (i.e., at the mouth of the Harbor) may be degrading by the presence of a large earthen structure immediately south and west. Such a facility would reduce the "historic setting" within which present visitors to downtown Charleston and the Fort itself can view the property. Similar, use of Site L in front of Castle Pinckney may result in similar effects if the spoils generate the development of a marsh island that blocks lines of sight from the fortifications to the mouth of the Harbor, or appears to block such sight lines when the property is viewed from downtown Charleston. This would detract from the ability of a visitor to interpret the historic setting of Castle Pinckney.

Other effects that will occur during the operation of a disposal site include the physical activities involved in collecting and redepositing the dredged materials. The physical collection of the materials within the shipping channels of the Harbor undoubtedly creates adverse visual and aural effects to the NRHP properties that can be visited or viewed within the Harbor (e.g., Fort Sumter, Castle Pinckney, Fort Moultrie, downtown Charleston). These effects are considered to be minimal, however, since dredging of the Harbor has occurred throughout its history and viable alternatives or mitigative options to this activity do not exist. Obviously, disposal sites located further from known NRHP properties will have less effect than those adjacent to such properties. Site selection would appear to represent the best mitigative option to such impacts.

As noted above, possible disposal sites that have the greatest potential to produce adverse effects to the existing historic landscape of Charleston Harbor are Sites I, L, M, and N. Sites J, K, and S minimally may create similar effects; however, their greater distance from the NRHP properties in the Harbor suggest that these effects will be of little or no consequence.

ASSESSMENTS OF POTENTIAL EFFECTS

An actual assessment of the anticipated effects of the construction and operation of the nineteen possible dredge disposal sites on cultural resources can be undertaken once known and potential resources within or adjacent to the nineteen locales have been identified and the anticipated effects outlined. Basically, the kinds of anticipated effects are compared to the kinds of resources known or expected to exist within or near each possible disposal site, and a score assigned to that site based on each comparison. As noted in Chapter III, scores were assigned at four values (*0, 1, 3, 5*), representing no anticipated effects to extreme adverse effects. Three categories of resources were defined, with scores assigned for each site in each category. These categories included:

known NRHP listed properties.

known NRHP eligible or potentially eligible resources.

potential cultural resources.

The sum of the values assigned to each possible disposal site for its effects on the three classes of resources formed a composite score. Comparisons of these scores permitted the ranking of each site based on its potential to affect cultural resources through its construction or operation. Note that each class of resource was given equal weighting (i.e., raw values were added together to create the composite score). This assumes that all resources (NRHP listed properties, known NRHP eligible or potentially eligible resources, and unknown resources) have equal significance. While some argument can be made that resources possess different levels of significance (e.g., local, regional, or national), such distinctions will not permit adverse effects to any resources without some mitigative effort.

Table 6 provides a summary of values assigned to each possible disposal site, their composite scores, and their predicted potential to affect cultural resources. The scores assigned to each site are derived from the kinds of effects each site is expected to produce and the nature of resources known or expected to exist within it. Sites with lower composite scores possess a lower potential to affect cultural resources in an adverse manner; sites with higher scores have a greater opportunity to affect cultural resources.

A brief review of Table 6 reveals that Sites B, E, J, and K appear least likely to affect cultural resources (Score= 0/Rank= 1). These sites all incorporate existing spoil disposal areas, will require little new construction to permit their use, and are not located in areas that represent historic landscapes. These sites would appear the best choices for possible disposal locales with regard to cultural resources.

Sites A, C, O, and P appear to represent the second best choices of disposal sites (Score= 1/Rank= 5, see Table 6). As above, three of these sites incorporate existing disposal areas; thus, additional deposition will have less opportunity to affect any resources that may be present. The only new construction will occur in Site P (an offshore berm in front of Folly Island). While some submerged resources are likely to be present, consultation with the SCIAA underwater archaeologist suggested that any effects to such resources would not result in serious degradation. All of these sites are located well away from any significant historic properties or landscapes as well.

Sites G, Q, R, and S possess the next greatest opportunity to affect cultural resources (Score= 3/Rank= 9). The three upland sites (G, Q, and R) contain primarily hydric soils, suggesting that they possess only moderate potential for containing unknown cultural resources. Site S has some potential to contain submerged resources given its proximity to the principal docks on the Cooper River.

Site I possesses the next greatest opportunity to affect cultural resources (Score= 4/Rank= 13, see Table 6). Although incorporating primarily an existing disposal area, its

Table 6. Assessment of Effects to Cultural Resources for Possible Disposal Sites.

SITE	POTENTIAL TO AFFECT: NRHP LISTED PROPERTY	NRHP ELIGIBLE RESOURCE	POTENTIAL CULTURAL RESOURCE	SCORE	RANK
A	0	0	1	1	5
B	0	0	0	0	1
C	0	0	1	1	5
D	0	0	5	5	14
E	0	0	0	0	1
F	0	0	5	5	14
G	0	0	3	3	9
H	0	5	1	6	16
I	3	0	1	4	13
J	0	0	0	0	1
K	0	0	0	0	1
L	5	0	3	8	18
M	5	0	1	6	16
N	5	5	5	15	19
O	0	0	1	1	5
P	0	0	0	0	5
Q	0	0	3	3	9
R	0	0	0	3	9
S	0	0	3	3	9

0= No Effects 1= Minimal Effects 3= Moderate Effects 5= Extreme Effects

proximity to Magnolia Cemetery (an NRHP listed property) may result in some degradation of that resources historic setting. If these anticipated effects can be minimized or removed, Site I would possess a similar score/rank (1/5) as Sites A, C, O, or P.

Sites D and F possess the next greatest opportunity to affect cultural resources (Score= 5/Rank= 14, see Table 6). Site D will incorporate primarily marsh; however, its contact with uplands on Cainhoy peninsula encounters Cainhoy sands that have displayed a high density of sites in that area. Thus, dike construction along the uplands may have adverse effects on any sites present within the disposal area. Site F, though containing primarily hydric soils that possess low probabilities for archaeological resources, is traversed by Cainhoy Road, an historic roadway from Charleston to Moncks Corner. A ferry landing was present in or near Site F, providing additional opportunities for historic archaeological resources to be present.

Sites H and M possess a high potential to affect cultural resources (Score= 6/Rank= 16, see Table 6). Site H contains 18 known archaeological sites; 15 are eligible or potentially eligible for nomination to the NRHP. Site M, though incorporating tidal marsh, is adjacent to and visible from Fort Sumter (an NRHP listed property). The presence of a disposal site at this locale likely will result in adverse visual effects to the setting of Fort Sumter.

Site L also possesses a high potential to affect cultural resources (Score= 8, Rank= 18, see Table 6). This assessment is based on its proximity to Castle Pinckney (an NRHP listed property) and the visibility of the possible disposal site from downtown Charleston. The site also possess some potential to contain unknown submerged resources. A number of recorded wrecks are present near to this locale, and it seems likely that additional wrecked vessels may exist within Site L. Note that affects to Castle Pinckney could be minimized if the deposited materials do not extend above the surface of the Harbor. Elimination of these anticipated visual effects would produce a score/rank (3/9) for Site L comparable to that for Sites G, Q, R, or S.

Site N appears to possess the greatest opportunity to affect cultural resources at this time (Score= 15, Rank= 19, see Table 6). This site lies near an NRHP property (Morris Island light), may incorporate known NRHP eligible resources (two Civil War period wrecks), and also may affect as yet unknown cultural resources related to the Civil War activities on Morris Island.

CHAPTER V

SUMMARY OF MANAGEMENT RECOMMENDATIONS

Assessment of the potential for nineteen possible dredge spoil sites in and around Charleston Harbor to affect cultural resources resulted in the ranking of each site with respect to its potential effects. This ranking can be employed to form the basis for the selection of several of these sites for more intensive study to determine which locale may provide the best alternative to the use of existing dredge disposal sites on Daniel Island.

In general, use of existing dredge disposal areas or offshore sites appears to present the least opportunity to affect cultural resources. Any of Sites B (Naval Weapons Station), E (Clouter Creek), J (Drum Island), and K (Patriots' Point) would be considered the best sites to utilize; additionally, any of Sites A (Yellow House Creek), C (TC Depot), O (Ocean), or P (Berm Site) would represent the next best alternatives.

Sites G (Rodent Island), Q (Cainhoy Road), R (Point Hope Island), and S (Town Creek) also possess a limited potential to affect cultural resources. These locales all possess a moderate potential to contain unknown cultural resources at present.

The remaining sites all possess higher expectations to affect cultural resources. Sites D (Upper Thomas Island) and F (Lower Thomas Island) possess a high potential for unknown resources; Site H (Parker Island) contains 15 known NRHP eligible resources and may contain additional submerged resources in adjacent streams or creeks. Site M (Fort Johnson) possesses a similar likelihood to affect cultural resources due to its proximity to Fort Sumter. Similarly, use of Site I (Old Landfill) may intrude upon the setting of Magnolia Cemetery. Elimination of these possible visual impacts would significantly reduce the potential of this site to affect cultural resources.

Site L (Middle Shoal) appears to possess a extremely high potential to affect cultural resources based on its proximity to Castle Pinckney. However, if the disposal site remains below the high tide line, anticipated visual impacts to Castle Pinckney could be significantly reduced, or eliminated.

Site N (Morris Island) appears to possess the greatest opportunity to affect cultural resources. The site is located near a NRHP listed property, may incorporate NRHP eligible resources, and also may affect unknown cultural resources related to Civil War activities on the Island.

Once the number of possible sites has been narrowed to those locales that are most viable, more intensive cultural resources investigations of these particular sites should be undertaken. Such investigations should include the review of historic plats and property

records, intensive examination of upland areas, and reconnaissance of creek banks in tidal marshes. Underwater sites may require both physical inspection and remote sensing surveys. Coordination with the SCIAA Underwater Archaeology Division will be necessary to determine the levels of effort necessary to examine the underwater sites since some portions of the Harbor have been examined that may include portions of the possible disposal sites.

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